

Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

D. VAN NOSTRAND,

Publisher of Scientific, Military and Naval Books,

23 Murray and 27 Warren Streets, New York.

Our Stock comprises a Large and Complete List of Works pertaining to

ARCHITECTURE, ASTRONOMY, NAVIGATION, BREWING, DISTILLING, CHEMISTRY, PHYSICS, CIVIL AND MECHANICAL ENGINEERING, ELECTRICITY, GEOLOGY, HYDRAULICS, SANITARY ENGINEERING, MATHEMATICS, and Works of Reference, etc.

Catalogues of the above will be sent to any address upon application

WE WOULD ALSO CALL PARTICULAR ATTENTION TO

Van Nostrand's Engineering Magazine.

LARGE 8vo MONTHLY.

Terms, \$5.00 Per Annum, in Advance.

Single Copies, 50 Cents.

ESTABLISHED IN 1869.

EIGHTEEN VOLUMES NOW COMPLETE.

Notice to New Subscribers.—Persons commencing their subscriptions with the Nineteenth Volume (July, 1878), and who are desirous of possessing the work from its commencement, will be supplied with Volumes I to XVIII inclusive, neatly bound in cloth, for \$48. Half morocco, \$74.50. Sent free by mail or express on receipt of price.

Notice to Clubs.—An extra copy will be supplied, gratis, to every Club of five subscribers, at \$5.00 each, sent in one remittance.

This Magazine has now begun the tenth year of its existence. Occupying a position among contemporary journals not claimed by any other periodical, it has proved by its steady growth during nine years that such a record of Engineering progress was from the first a recognized necessity.

The leading aim of the Magazine is to present the best possible summary of the progress of Engineering principles and practice throughout the world. To accomplish this end, a digest of the current history of works in progress from home and foreign journals, and the original essays of the best home writers have jointly contributed.

Two classes of minds are constantly aiding all scientific advancement, each largely dependent upon the other for success, The exclusively practical Engineer scorns the principles of the books and reaps undoubted success by empirical rules only. But to work beyond the field of his individual experience, guided by his rule of thumb, is to invite disaster. In any dilemma he needs the counsel of that class of his conferres whose labor has been in evolving the scientific principles of his profession. Only by the aid of an Engineering journal can the results of both fields of labor be rendered serviceable. Progress in this department of science is at present so rapid that, whether we regard the magnitude of the new projects, the originality of the designs, or the materials employed, we find the established precedents of but a few years ago of but little use as guides to the best success.

To keep pace with this progress is a necessity to all who would contribute to an advance of the profession in

That the foremost writers on Engineering subjects are alive to the importance of their own active labor the pages of the last two or three volumes of this Magazine bear ample testimony.

As heretofore, subjects relating to Civil Engineering proper receive the first attention. Progress in Mechanical, Sanitary, Mining and Military Engineering and Architecture is duly chronicled, especial care being observed to exclude all articles that seem in any way to be biased by the enthusiasm of the inventor or the self-interest of an owner.

CONTENTS.

On an Application of the New Atomic Theory to the Graphical Representation of the	PAGE
Invariants and Covariants of Binary Quantics. By J. J. SYLVESTER.	
Appendix 2. On Hermite's Law of Reciprocity, (Concluded,)	105
Note A. Completion of the Theory of Principal Forms,	106
Note B. Additional Illustrations of the Law of Reciprocity,	107
Note C. On the Principal Forms of the General Sextinvariant to a Quartic and	
Quartinvariant to a Sextic,	112
Note D. On the Probable Relation of the Skew Invariants of Binary Quinties and Sextics to one another and to the Skew Invariant of the same Weight of the Binary	
Nonic,	114
Appendix 3. On Clebsch's "Einfachstes System associirter Formen" and its	
Generalization,	118
Note on the Ladenburg Carbon-graph,	125
Extract of a letter to Mr. Sylvester from Professor Clifford of University College,	
London,	126
Researches in the Lunar Theory, II. By G. W. HILL, Nyack Turnpike, N. Y.,	129
Bipunctual Coordinates. (Plate II.) By F. Franklin, Fellow of the Johns Hopkins	
University,	148
Desiderata and Suggestions. By Professor Cayley, Cambridge, England. No. 2.—	
The Theory of Groups; Graphical Representation,	174
On the Elastic Potential of Crystals. By WILLIAM E. STORY,	177
Théorie des Fonctions Numériques Simplement Périodiques. (To be continued.) PAR	
Edouard Lucas, Professeur au Lycée Charlemagne, Paris,	184